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Mining and Minerals:

Canada's Competitive Advantage

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Canada

FOREWORD

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INTRODUCTION

Mining and Minerals: Canada's Competitive Advantage

Good morning honoured guests, ladies and gentlemen. It is a pleasure to be here today and to be the first presenter.

My remarks today will focus on Canada's mining and minerals industry. I will try to give a broad overview, setting the stage, so to speak, for the next two days of speakers.

Four factors have basically given Canada its standing as one of the world's major mineral producers and has made Canada a leader in the global mining community.

They are:

1. **Canada's geological endowment**, which Dr. Murray Duke of the Geological Survey of Canada will discuss next;
2. **Canada's attractive and stable business environment**;
3. **Canada's mining and mineral processing tradition**; and
4. **Canada's international presence.**

ATTRACTIVE AND STABLE BUSINESS ENVIRONMENT

Canada's Economic Situation

While attractive geology, which Canada possesses and Dr. Murray Duke will discuss, is a necessity, it is not by itself a guaranty for a strong and vibrant mining sector. A strong mining sector also requires an attractive and stable business environment.

In fact, given the cyclical nature of the industry, and the large capital costs and long-lead times required to bring a mine into production, long-term stability is of particular importance to this industry.

The Canadian economy is, today, quite vibrant. Canada's fiscal situation is looking very good. A budget surplus was announced for 1997/98 fiscal year, and a second surplus will be announced by the Minister of Finance, tomorrow, for the fiscal year 1998/99. The government has also committed itself to a balanced budget or surplus for the fiscal year 1999-2000. For the first time in almost 50 years the federal government will have balanced its books for three years in a row.

Provincial and territorial governments, in part following the lead of the federal government, are also reducing their deficits.

A lower collective deficit has enabled the Bank of Canada to relax monetary conditions which have led to stronger economic growth. Real gross domestic product (GDP) growth in 1997 was

3.8%. In its December Economic Outlook, the Organization for Economic Cooperation and Development (OECD) projects that the Canadian economy will out perform all other G-7 economies with a GDP growth rate of 2.4% in 1999 and 2.9% in 2000.

Inflation, which peaked in January 1991 at 6.8%, has, on an annual basis, remained under 2.2% since 1992. Inflation in Canada is currently sitting at 1% (December 1998). A low inflationary environment has been established.

Low inflation, together with the progress made by all levels of government in Canada to restore fiscal balance, has resulted in a substantial decline in interest rates, with medium- and long-term interest rates near their lowest level in decades.

With export growth outpacing import growth, Canada's trade balance advanced $418 million to $1.9 billion in October. This represents the second highest surplus recorded so far this year.

With an economic slowdown predicted for the United States, Canadian exports are expected to grow more slowly in 1999 than in recent years.

Real Effective Exchange Rates, Major Zinc Producing Countries, 1991-98

Because metals are priced in U.S. dollars, currency fluctuations vis-à-vis the U.S. dollar are of particular interest to mining companies.

The strength of the U.S. dollar in the first half of 1998 was primarily a reflection of two factors. First, there was the strength of the U.S. economy, which had been expanding faster and operating at higher levels of capacity utilization than had previously been thought to be sustainable. The second factor was the attractiveness of the large, efficient and liquid U.S. financial market at a time when, because of uncertainties in Asia, nervous investors were looking for a safe haven.

While it is true that the Canadian dollar has declined vis-à-vis the U.S. dollar, the Canadian dollar has fared relatively well compared with the currencies of other major mineral producers.

Minor and/or short-term variations in exchange rates may increase or reduce pressures on a firm's bottom line. However, it will not affect a firm's long-term viability. On the other hand, large and longer-term increases against competitor countries, vis-à-vis the U.S. dollar, who produce the same commodity (after adjusting for inflationary differences), can seriously affect a firm's ability to compete on international markets.

This slide shows the real effective exchange rate indexes of the five major zinc producing countries of the world, from the first quarter of 1991 (indexed at 100) to the third quarter of 1998.

(While five countries are shown here, each country's index is computed using a basket of 13 zinc producing countries.) Each country's exchange rate is weighted by that country's relative importance in the world production of zinc. The index, thus calculated, shows the net effect of the two forces of inflation and exchange rate changes which can either offset or augment one another. A falling line indicates a gain in competitiveness for producers in the respective country.

Over the period shown, real effective exchange rate realignments have tended to have disparate impacts on competitiveness for the five zinc producing countries. Canadian producers have benefitted the most, while Peruvian and U.S. producers have seen a significant negative impact on their competitiveness based on real effective exchange rates. Australia has gained in the past year the competitiveness it had lost over the previous several years.

Mexican producers have seen a general rise in real effective exchange rates over the period, the rise broken only temporarily by the exchange crisis of December 1994 that saw the peso plunge massively and uncontrollably.

Like Canadian zinc producers, Canadian copper producers have also seen a gain in competitiveness relative to other countries. Chilean producers have lost dramatically. Australian and U.S. copper producers have generally gained in competitiveness since 1991 based on real effective exchange rates, but the United States has lost somewhat in the past year, as the dollar strengthened in the first half of 1998 against most currencies. Indonesia's real effective exchange rate plummeted in late 1997 as its currency fell during what is now known as the Asian crisis.

In the case of nickel, Canadian nickel producers have also generally gained in competitiveness based on real effective exchange rates over the period shown, although there has been a dramatic upwards turn in the index since early 1997.

Indeed there has been an upwards turn in the real effective indexes of all the major nickel producers except Indonesia, whose dramatic currency devaluations in 1997 affected other producers' indexes, given Indonesia's significant weight in the basket of nickel producers.

Key Features of Canada's Federal Income Tax Regime

Taxes are an important and unavoidable component of the business climate. Canada's tax regime is relatively stable, albeit complex, with different tax instruments being used by three levels of government: federal, provincial and territorial, and municipal.

Despite this reality, the Canadian federal corporate income tax regime offers a high degree of stability from three perspectives.

1. the current regime has not been fundamentally amended since the 1971 tax reforms, although periodically there have been incremental changes;

2. if changes were instituted, they were done after consultations where business and other key stakeholders had the opportunity to express their concerns and suggestions. Also, the Income Tax Act, in most cases, provided transitional measures to permit businesses time to adjust; and
3. the federal regime offers stability through consistency, since 7 out the 10 provinces have adopted the federal corporate income tax regime as their own. In these provinces, the declared corporate taxable income is the same on both the federal and provincial income tax forms. Even in the three provinces that have a separate corporate income tax administration, every effort is made to harmonize with the federal tax base.

In addition to stability, the current regimes recognize that not all businesses operate in the same environment and that business cycles do affect profitability. As a result, in order to encourage investment in private enterprise, the federal tax regime includes provisions of a general nature and, in some cases, provisions tailored to the uniqueness of resource specific industries. Often, the taxpayer has the flexibility to decide how best to exercise one's tax deductions.

As domestic savings are insufficient to meet domestic demand for investment, Canada is a net importer of capital. As a result, in part, the Canadian tax regime has been designed to attract capital and encourage international trade.

Canada also encourages companies to use Canada as a base for managing mining operations around the world.

Canada's Resource Industry-Specific Provisions

In the most simplest form, a corporation will pay taxes on its taxable income. Currently, a firm pays 29.12% of its taxable income as a tax to the federal government. Furthermore, in 7 out of 10 provinces, the corresponding provincial income tax will be a percentage of the same taxable income.

To accommodate the special needs and circumstances of the resource business, the calculation of taxable income has become more complex than would have been the case if uniform rules were applied to all sectors.

Because of the inherent complexity of Canada's tax calculations, we must be careful how we analyze the tax effects of a potential investment. I will elaborate on this cautionary statement later.

Now, let me cite a few examples of what could constitute a general deduction or a resource specific deduction.

The drafters of the current tax system wanted to ensure that the tax system generated revenues for the Treasury while encouraging continual investment into private enterprise. As a result, the

calculation of taxable income was designed to take into account all valid deductions arising from normal business activities.

For instance, at a general level, the Canadian tax regime provides deductions for these activities in four areas.

1. Normal operating expenses (except depreciation) can be expensed for tax purposes immediately;
2. In lieu of depreciation, one may claim a capital cost allowance (CCA) deduction. The rules concerning CCA are complex and will not be discussed here. Essentially, they have been devised in order to approximate an asset's net economic residual value by the asset's book value less CCA deductions taken;
3. In order to encourage additional investment, debt interest payments are tax deductible thereby lowering the real cost of capital; and
4. Canada allows non-capital losses to be carried back three years or carried forward seven years. This provisions exists to ensure that taxes payable reflect the long-term profitability of a business and that it does not compromise its economic viability during temporary difficulties.

Finally, where possible, flexibility has been instilled into the system in order to permit taxpayers some freedom in claiming various deductions.

In addition to general provisions, the Canadian federal tax regime does recognize some of the unique risks inherent in the resource sector (including the mining sector). In aggregate, the government continues to encourage development of the mining industry throughout the entire mining life-cycle, including exploration, pre-production, production and, eventually, mine reclamation. Overall, these incentives generally decrease a mining firm's required cost of capital.

For instance, the resource allowance is a replacement for the deductibility of provincial mining royalties/taxes. It is calculated as 25% of a firm's resource income. Formerly, provincial mining royalties were deductible for federal income taxes (normal business expense). For base and precious metal producers, the amount actually deducted (as per this calculation) significantly exceeds the amount of mining royalties paid.

The Canadian Exploration Expense (CEE) permits a 100% deduction for exploration and pre-production expenses. Any unused balances can be carried forward indefinitely.

Canadian Development Expense (CDE) is a 30% declining balance write-off for expenses related to the development of a mine after the commencement of commercial production. Any unused balances can be carried forward.

Although most mining assets qualify for 25% CCA treatment, some assets, especially in a new mine/expansion are eligible for ACCA treatment at 100% deductibility. With CEE and ACCA, mining firms do not pay income taxes until all capital costs have been recovered.

Finally, mine reclamation activities are being implemented. In Canada, contributions to a mine reclamation trust are deductible as a current expense, if they have been mandated by a provincial authority.

Canada's International Tax Features

Canada understands the importance of and appreciates foreign investment. To attract investment, Canada has established tax treaties with other nations, ensuring a greater degree of stability. Tax treaties in general cover a range of tax issues and, often, contain provisions for bilateral foreign tax credits on foreign source income.

The treaties also secure the same benefits for foreign multi-national enterprises (MNE) as their Canadian counterparts.

As of January 1, 1999, Canada has established 70 tax treaties (65 in force and 5 signed not in force) with other countries and is aggressively in negotiation/re-negotiation to sign another 35.

In the case of MNEs, not all services are replicated in all jurisdictions. As a result, firms may institute charges for administrative and management services (ie. MIS, finance, marketing, etc...), product royalties and financial transactions. Often, transfer pricing is employed as a method to transfer these costs into the end products/services sold in the other jurisdiction.

However, in theory, transfer pricing could be exploited in order to shift costs from low tax rate jurisdictions to high tax jurisdictions. As a result, tax authorities are taking action to restrict the scope for cost and revenue shifting by MNEs. As far Canada is concerned, we are viewed as a "reasonable" jurisdiction.

Additionally, Canada is perceived as being more flexible than our American counterparts. Most of the perceived flexibility can be shown by examining the difference between the transfer pricing monitoring practices of Canada and United States. In the United States, transfer price monitoring remains a subjective exercise, limiting the overall flexibility conferred to the tax payer.

On the other hand, if the same business operated in Canada, it would have more flexibility to establish fair transfer prices, thanks to our objective criteria and rules concerning transfer pricing.

Canada is consistent with the rest of the international community in terms of its tax treatment of foreign source income and inbound investment. Canada remains competitive, thanks to our practices with respect to withholding taxes and thin capitalization rules[1]. Let us consider four of

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[1] Thin capitalization rules have been designed to restrict a deduction for interest paid or payable by a corporation (resident in Canada) in a taxation year on debts owing to specified non-residents if the ratio of these debts to the corporation's equity exceeds three to one.

them.

1. Our thin-cap rules are objective and not subjective as those in the United States;
2. Our system offers flexibility. Just consider that, for equity issues, foreign investors do not pay withholding taxes until all equity capital has been fully repatriated;
3. Even though Canadian firms pay income tax on global income, we ensure that they are not disadvantaged relative to their foreign based competitors via our withholding tax rules. Now, on the surface, our withholdings taxes appear to be high, 25%. However, if the non-resident is a resident of a country which has a tax treaty, as is often the case, the withholding tax rate is either eliminated or reduced to something in the range of 5% to 15%; and
4. We have no rigid capital controls limiting capital flows. As a result, investors in Canada are free to finance their projects with their own capital structures (financing arrangements), have easy access to foreign exchange markets and can move capital in and out of Canada without restrictions.

International Tax Burdens: Methods of Evaluation

As one can see, the Canadian tax system has multiple features that attempt to address the fact that not all firms are the same or are undertaking the same type of business activity.

Canada's tax regime tends to allow fast write-offs and other front-loaded investment incentives, thereby allowing for a relatively long initial tax-free period. The timing of tax payments is paramount to understanding how this tax structure affects a project's cash flow and returns. There is a value to the company of having tax payments deferred. This is important in a capital intensive and very cyclical industry such as mining.

The less appealing part of a front-loaded tax system such as Canada's is that it is partially offset by a relatively higher tax rate. As a result, Canada is seen as a high tax regime when statutory income tax rates are compared.

Even a comparison of marginal tax rates that incorporate the "permanent" deductions in a country's tax regime such as resource, processing, and/or depletion allowances, fails to capture all of the unique features of the Canadian corporate income tax system.

To truly evaluate a country's tax burden one must consider both permanent deductions and front-end tax incentives (tax deferrals, tax holidays, and tax credits), and look at their effects on the

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For instance, if you had a firm which had 80% debt held by foreigners and 20% equity, the interest payments exceeding 60% of the debt would not be deductible for corporate income tax. On the other hand, if the same firm had 25% equity and 75% debt owing to foreigners, it could deduct all the interest expense.

Overall, the strategy of the thin cap rules are to prevent mis-using the capital structure to transfer potential profits from Canada to other jurisdictions.

overall tax burden imposed on a project over its entire life. In what follows, I explain our tax features by looking at the tax burden on an individual mining project.

Impact of Incentives on the Federal Income Tax Base

For example, in Ontario, assuming a project capable of generating a 10% internal rate of return, a mine may be sheltered from corporate income tax for the first seven years of production. This situation is made possible by the existence of generous and flexible depreciation and write-off rules that allow the deferral of any tax payment until capital costs are fully recovered.

It is also important to remember that these features, in most instances, also extend to provincial income taxes, as well as to provincial and territorial mining tax regimes. In Canada, provincial mining tax regimes are based on profits, and many also feature tax holidays for new mines, and automatic deductions which further reduce the tax base.

The pink, yellow and turquoise areas represent the portion of net revenue which is offset by depreciation, exploration and development costs and other deductions. The green area represents taxable income.

Obviously, the actual tax burden of a mine in a given jurisdiction (measured by the share of profit taken as taxes by governments) can vary greatly year to year due to a number of factors including: age of the mine (e.g., have front-end deductions been exhausted or not?), and profitability (did the mine turn out to be highly profitable?), etc.

Generally speaking, a company that is well established would rather have a lower tax rate than front-end incentives. On the other hand, a company that is in the process of bringing a mine into production will likely place a higher value on recovering its capital prior to paying taxes. A company's preference depends on where it is in the life cycle of a mine, and the importance of that mine within the mine investment portfolio.

Relative Cost of Research and Development (R&D) Expenditures, 1995-96

Before leaving the subject of corporate income tax, I would like to briefly mention Canada's favourable tax treatment of R&D expenditures.

A recent study has shown that Canada's tax treatment of R&D expenditures is one of the most favourable among industrialized countries. Tax relief for R&D spending is provided by both the Federal Government and six provinces.

Large companies qualify for a federal R&D tax credit of 20% on eligible R&D expenditures, which can be used to reduce or eliminate federal tax otherwise payable. Small Canadian - controlled companies qualify for a federal R&D tax credit of 35% on up to $2 million of annual

R&D expenditures. The 35% tax credit on current expenditures may be fully refunded. All R&D expenditures can be written off over one year.

The tax credits are applicable to all eligible current and capital R&D expenditures. Buildings and used equipment do not earn tax credits.

This regime is substantially more favourable than the one in the United States, where a tax credit of 20% is available on incremental R&D expenditures only, and where capital expenditures are depreciated over five years and do not earn tax credits.

Environmental Regulations in Canada: Recent Developments

While a country's tax regime is obviously an important factor in determining the attractiveness of a country's investment climate, other factors, such a environmental regulations, can be equally important.

In Canada, responsibility for the management of the environment is shared between the federal government and the provinces. Both levels of government have, in recent years, revised their environmental regulatory regimes in response to environmental, social and economic concerns.

Federal and provincial governments are continuing to undertake broad regulatory reform initiatives aimed at improving the efficiency and effectiveness of environmental regulations affecting mining in Canada.

For instance, Canada's Ministers of Mines, in July 1997, launched the first ever federal-provincial-territorial cross-cutting review of mining and environmental regulations affecting mining in Canada.

This initiative involved key stakeholders, and federal, provincial and territorial mines, environment and fisheries ministers.

The results of the review, presented at the last Mines Ministers' Conference, July 1998, indicated a general agreement on the need to:

- maintain or improve environmental protection;
- clarify responsibilities and requirements; and
- improve communications, collaboration and cooperation within and between governments, and with key stakeholders.

Other important developments include:

1. the *Canada-wide Accord on Environmental Harmonization (the Canada-wide Accord)* signed by the Canadian Council of Environment Ministers (CCME) on January 29, 1998.

- The objective of the *Canada-wide Accord* is for governments to work in collaboration to protect the environment. Both levels of government retain their regulatory responsibilities;

2. Federal-Provincial Agreements to cooperate on environmental assessments.
- These bilateral, and project-specific, agreements ensure that new development that projects are subjected to a single process that meets the requirement of both the federal and provincial governments;

3. the Federal Coordination Regulations and guidelines for panel review.
- These guidelines impose time lines on various portions of the federal environmental assessment process, thereby increasing the predictability; and

In addition, there will be an efficient integration of science and policy-making in the recommendations for revision of the *Metal Mining Liquid Effluent Regulations*.

An efficient integration will result in a revision process that respects stakheholder consensus, is guided by the Government's policy in relation to minerals and metals, is consistent with the spirit of the Canada-Wide Accord on Environmental Harmonization, and is based on scientific evidence.

Finally, the *Fisheries Act* (FA) will be amended to replace authorizations with mandatory federal permits for projects with the potential to significantly harm fish habitat. This will provide greater certainty for project applicants. It will also ensure that all projects with the potential to significantly harm fish habitat are reviewed under both the FA and the Canadian Environmental Assessment Act.

Time to Complete the Environmental Assessments of Mining Projects in Canada

The greater harmonization of federal and provincial environmental regulations, and cooperation between the two levels of government have led to a significant decline in the number of months to complete environmental assessments of mining projects in Canada in recent years.

The graph shows mining projects that have recently completed the environmental assessment process in Canada. In the following chart the vertical axis represents time to complete an environmental assessment measured in months. On the horizontal axis is time from 1991 to 1996.

We expect this downward trend to continue as a result of additional regulatory improvements. We recognize the importance to investors of developing mining projects as rapidly as possible.

While it is true that the Canadian environmental assessment system is strict, it is not prohibitive. Deposits are being evaluated and mines are being developed. For instance, since 1989, 99 new mines have opened.

STRONG MINING AND MINERAL PROCESSING TRADITION

World Production Share and Ranking of Selected Commodities Produced in Canada, 1997

The opening of 99 new mines since 1989 has enabled Canada to maintain its standing as one of the world's largest producers of minerals.

Canada produces some 60 mineral commodities including 26 metals, 22 nonmetals (and diamonds were very recently added to this list) and five structural minerals.

Approximately 300 mines, 3000 stone/sand/gravel quarries, and some 50 nonferrous smelters, refineries and iron plants currently operate in Canada.

Canada is the world's largest producer of both potash and uranium. In 1997, Canada also ranked second in the production of asbestos, cobalt, nickel, magnesium, elemental sulphur, zinc and cadmium. Based on preliminary data, in 1998, Canadian nonfuel mineral production including coal was valued at more than $18.3 billion.

Canada's Mining and Minerals Expertise

One can not underestimate the human and financial effort required to bring a single mine into production, much less 99 in 10 years. And I should note that this figure does not include 70 mine reopening that were record over the same period.

To achieve this record, Canadian exploration and mining companies have had to develop unique exploration, and mining methods and technologies along with a risk-taking and aggressive prospecting attitude.

As Canada's exploration and mining sector expanded and matured over time, Canada's service sector incidental to exploration and mining has also grown. This sector, once limited to diamond drillers, geoscience and geophysical services, and base-camp logistical support providers, etc., has grown to incorporate less traditional mining equipment and services companies including legal, accounting, due diligence and financing companies that serve the mining community.

Canadians have pioneered the development of geophysical exploration techniques, be they ground or airborne. Canadian companies have captured 70% of the world market share for airborne geophysical equipment, while Canadian geophysical equipment manufacturers, related software developers and data interpretation companies hold about 60% of world markets.

Canadian mining companies are well on the way to creating the "intelligent mine" - one that can automatically detect changing conditions and respond quickly. In addition, more than 85% of the mining work force in Canada uses electronics, robotics and advanced telecommunication technologies.

Canada has also developed entire automated systems for mineral processing. Canadian technologies improve mine safety, enhance environmental systems, and increase productivity, allowing mining companies to explore deeper, richer ore bodies.

Canada's leading Ten Industries in Total Factor Productivity (TFP) Growth, 1984-95

The level of innovation and technological advances that are linked to Canada's mining and mineral sector, has made this sector one of the most productive in the Canadian economy.

According to a recent study by an independent agency, the leading industry in total factor productivity growth in Canada over the period 1984 to 1995 was the coal industry.

Productivity in our coal industry grew at a staggering average annual compound rate of 9 percent from 1984 to 1995 and exceeded other sectors such as electrical products and telecommunications.

Productivity increases are essential to controlling costs and maintaining the industry's competitive position in international markets. The success or competitiveness of Canada's mining industry is largely determined by productivity, input prices and exchange rates. Input prices (e.g., wages) and exchange rates are difficult for the industry to control. Therefore, improvement in productivity is the key factor in strengthening the industry's position relative to its major competitors.

Three of the ten leading industries in total productivity growth over the past decade were part of the mining industry - coal mines, non-metal mines and metal mines.

Productivity growth in our mining industry has dwarfed productivity growth in manufacturing and the total economy.

Mining's strong productivity growth is truly outstanding given that stricter health and safety, and environmental regulations over time tend to lower productivity growth.

In other words, our mining industry has become more efficient while improving working conditions and protecting the environment.

The reasons for the strong productivity growth in Canada's mining industry since the early 1980s are twofold.

1. improvements have occurred in the quality of labour. Current miners have greater knowledge, experience, skills and education than their predecessors. Canada's mining industry flourishes because of a highly skilled and productive work force; and
2. significant technological advances have occurred in all aspects of our mining industry from exploration to the protection of the environment.

[Exploration innovations include airborne geophysics, global positioning systems (GPS) and geochemical techniques. Geochemical exploration techniques were certainly instrumental in the discovery of Canada's diamond deposits - Ekati, Diavik and others.

Mining or extraction innovations include computer modeling and simulation techniques, mine design and entire automated mining systems.

Processing innovation include in-mine crushing, automated material handling, material characterization and liberation analysis.

Environmental innovations include environmental monitoring, rehabilitation design and waste disposal design.]

Strong productivity growth in all aspects of mining in Canada has allowed Canada to remain competitive in international base and precious metal markets, and a world leader in mineral production.

I should also note that these achievements have not been limited to just traditional mining and mineral-related services.

Sources of Equity Financing for Mining Companies, 1997

Canada is the world leader in mine financing. In 1997, public companies raised $10.1 billion in equity around the world. Of this total, 47% was raised in Canada. Canadian companies raised twice the value of their nearest competitors in the United Kingdom and Australia.

As a result, a number of foreign companies have taken notice and listed on Canadian stock exchanges. Boliden, Normandy, Meridan, Philex, Samax Gold and TVX Gold are examples of companies, in the past two years, which have chosen to relocate to Canada to take advantage of our financing opportunities.

The benefits include:

1. good coverage of companies of all sizes by the 100 plus mining analysts in Canada - which frequently leads to higher valuation multiples;
2. more exposure to Canadian and the U.S. financial institutions;
3. more contact with both junior exploration and senior mining companies based in North America;
4. less onerous shareholder approval provisions on the issue of additional shares; and

5. access to the *Multi-Jurisdictional* Disclosure System (MJDS).

The MJDS is a reciprocal initiative between the Canadian Securities Administrators and the U.S. Securities Exchange Commission (SEC) to facilitate U.S.-Canadian cross-border securities offerings. Access to the MJDS system is beneficial as it allows access to the much larger U.S. capital markets using a Canadian prospectus, not generally subject to SEC review.

In effect, by listing on a Canadian exchange, a company can easily access U.S. capital markets.

The giants of global finance are also relocating to Canada to be closer to the action. Recently, Credit Suisse First Boston and Deutsche Morgan Grenfell moved their respective international headquarters for mining finance to Toronto.

Exploration Expenditures in Canada, 1990-98

Access to capital, and Canada's varied and superb geology has given rise to two types of exploration companies in Canada - junior exploration companies and senior companies.

In Canada, a junior company is defined as a company that receives no income from a producing mine, in other words, it is a pure exploration company. Junior companies raise money through the stock exchanges or the private placement of shares in order to undertake exploration activities.

Junior exploration companies, which tend to be more aggressive than senior companies, are an important part of Canada's mining tradition. Canadian junior companies such as Dia Met Minerals Ltd. (Lac de Gras, diamonds) or Diamond Fields Resources Inc., (Voisey's Bay, nickel-copper-cobalt) have been responsible for a number of significant mineral discoveries in Canada.

Despite their smaller size and their financial constraints, the juniors account for close to 40% of all exploration expenditures in Canada and are a very dynamic and successful part of the Canadian exploration sector.

This slide depicts exploration expenditures in Canada over the period 1990-98. I have chosen this period to show you how strongly exploration spending recovered after reaching an historic low in 1992.

In fact, after recording a low of $413 million in 1992, exploration expenditures increased steadily until 1996 to reach $899 million. They then settled back somewhat to $804 million in 1997 and are forecasted to have reached $764 million in 1998. Although exploration spending has declined over the last two years, I would say that, despite the current low metal prices, these figures point to a quite strong exploration sector in Canada.

The relatively higher expenditures since 1992 have been driven principally by important discoveries of diamond deposits in Canada's north and by the late-1994 nickel-cobalt-copper discovery at Voisey's Bay in Labrador.

CANADA'S INTERNATIONAL PRESENCE

Canada's Proportion of Worldwide Budgeted Exploration Expenditures, 1993-97

Canada's mining industry, supported by a strong domestic base (geological endowment of Canada, a stable economic environment, and an established mining tradition), has had the strength and fortitude of mind (willing to take the risk) to go international.

At the end of 1998, companies of all sizes listed on Canadian stock exchanges held interests in a portfolio of more than 6800 exploration or producing properties located in Canada (3500) or elsewhere around the world (3300).

Large Canadian companies now control approximately one-third, a dominant share, of planned exploration expenditures around the world. This is up from around 22% in 1992. They now account for approximately (1998):

- 48% of large company exploration in Europe;
- 46% of large company exploration in the United States;
- 38% of large company exploration in Latin America;
- 23% of large company exploration in Africa-Middle East; and
- 9% of large company exploration in Asia-Pacific.

Canadian Participation in Major Development Projects Worldwide

As one can see from this map, Canadian companies are involved in projects around the world.

I should note, that many of these projects are being undertaken in cooperation with third country companies - including Japanese companies.

Copper:

1)	La Granja	Cu	Peru	Cambior
2)	Augu Rica	Cu/Au	Argentina	Northern Orion
3)	Cerro Colorado	Cu	Panama	Tiomin Resources Inc.
4)	Tenke Fungurume	Cu	Zaire	Tenke Mining Corp.
5)	Antamina	Cu/Zn	Peru	Rio Algom, Teck Corp., Noranda Inc.
6)	El Pachon	Cu	Argentina	Cambior
7)	Petaquilla	Cu	Panama	Adrian Resources Ltd., Inmet, Teck
8)	Cerro Casale	Cu/Au	Chile	Placer Dome, Bema Gold
9)	Santo Tomas	Cu	Mexico	Exall Resources Ltd., Britannia Gold Corp.
10)	Prosperity	Cu/Au	Canada	Taseko Mines Ltd.

Gold				
1)	Pascua	Au	Chile	Barrick Gold Corp
2)	Las Cristinas	Au	Venezuela	Placer Dome
3)	Pierina	Au	Peru	Barrick Gold Corp
4)	Bulyanhulu	Au	Tanzania	Sutton Resources Ltd.
5)	Vasilkovskoye	Au	Kazakhstan	Teck Corporation
6)	Skouries	Au	Greece	TVX Gold Inc
7)	Casino	Au/Cu	Canada	Pacific Sentinel Gold Corp.
Nickel				
1)	Goro	Ni	New Caledonia	Inco Ltd.
2)	Voisey's Bay	Ni	Canada	Inco Ltd.
3)	Barro Alto	Ni	Brazil	Inco Ltd.
4)	Kabanga/Kagera	Ni	Tanzania	Sutton Resources Ltd.
5)	Loma de Niaquel	Ni	Venezuela	Jordex Resources
6)	Maggie Hays/Lake Johnston	Ni	Australia	LionOre Mining International Ltd.
7)	Emily Ann	Ni	Australia	LionOre Mining International Ltd.
Zinc				
1)	Crandon	Zn	United States	Rio Algom Ltd.
2)	Cirque	Zn	Canada	Cominco, Teck
3)	Izok Lake	Zn	Canada	Kit Resources Ltd
4)	QDS (Qiandongshen)	Zn	China	Asia Minerals Corp.
5)	Kassandra	Zn/Au	Greece	TVX Gold Inc
6)	Kudz Ze Kayah	Zn	Canada	Cominco Limited
7)	Pend Oreille	Zn	Canada	Inmet Mining Corp.

Canada's Share of Western World Metal Production, Forecast 2002

Canada's international presence is not just limited to exploration properties. Canadian companies have producing operations throughout the world.

This slide compares Canada's expected share of world production in the year 2002, based on mine location and mine-ownership (production was allocated to each country based on the nationality of the companies owning the mine, and their percentage interest in it) for copper, nickel and zinc. Based on mine ownership Canada's share of world production of copper increases from 5.4% to nearly 12%.

The difference in the share of nickel production by mine ownership compared with mine location is also substantial. In the year 2002, Canada's share of world production based on mine ownership is expected to be over 35%, compared with about 22% based on domestic production. A good part of the difference in Canada's share internationally is due to Inco's presence in Indonesia.

As with copper and nickel, Canada's share of expected zinc production in the year 2002 is larger when calculated based on mine ownership rather than on mine location. Canadian companies should be producing about 33% of the world's output of zinc by the year 2002, compared to

Canada's domestic share of about 21%. Much of this difference is due to the huge Red Dog mine in Alaska in which Canadian-based Cominco Ltd. has a major stake.

The international presence of Canadian exploration and mining companies means that Canadian companies are involved in most of the world's major discovery plays. This lowers production costs and benefits investors through higher earnings. Because Canadian companies are almost everywhere, they are the beneficiaries of both commodity and country risk diversification.

CONCLUSION

As I have tried to show today, Canada international competitiveness in mining and minerals is based on four main factors:

1. Canada has been blessed with a **varied and rich geology**;
2. Canada has a **stable and attractive business environment** that supports mining and mining-related industries;
3. Canada's mining sector, supported by a superior mining-related equipment and services sector, has developed world-class exploration and mining techniques - **a strong mining tradition**; and
4. The ability and willingness of Canadian companies to explore for, and develop, mines anywhere in the world, in other words, **Canada's international presence**.

Mining and Minerals: Canada's Competitive Advantage

Dr. Dale L. Hull
Director, Economic Analysis Division,
Minerals and Metals Sector, Natural Resources Canada
Tokyo, February 1999

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Mining and Minerals: Canada's Competitive Advantage

- Canada's Geological Endowment
- Attractive and Stable Business Environment
- Strong Mining and Mineral Processing Tradition
- Canada's International Presence

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Canada's Economic Situation

- Low Inflation Rate
- Low Interest Rates
- Economic Growth
- Balanced Federal Budget
- Positive Trade Balance
- Undervalued Currency

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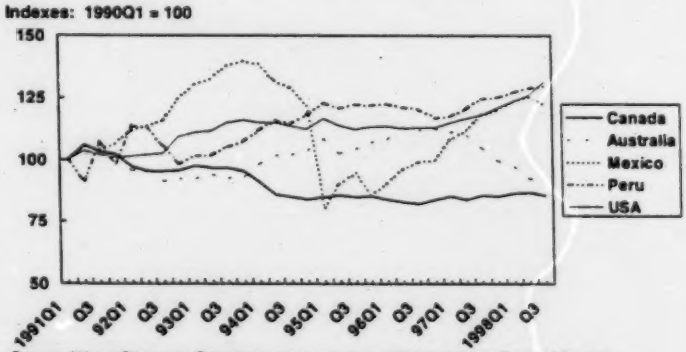
Real Effective Exchange Rates for Major Zinc-Producing Countries, 1991-98



Source: Natural Resources Canada, based on data from IMF *International Financial Statistics* and World Bureau of Metal Statistics.
Note: Q = quarter.

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Key Features of Canada's Federal Income Tax Regime

- Stability
  - Fundamentally Unchanged since 1971
  - Consultations and Transitional Measures
  - Basis for the Provincial/Territorial Income Tax Regimes
- Flexible Deductions
  - General Provisions
  - Resource Industry-Specific Incentives

Canada's Resource Industry-Specific Provisions

- Resource Allowance
- Canadian Exploration Expense (CEE)
- Canadian Development Expense (CDE)
- Accelerated Capital Cost Allowance (ACCA)
- Reclamation Expenses

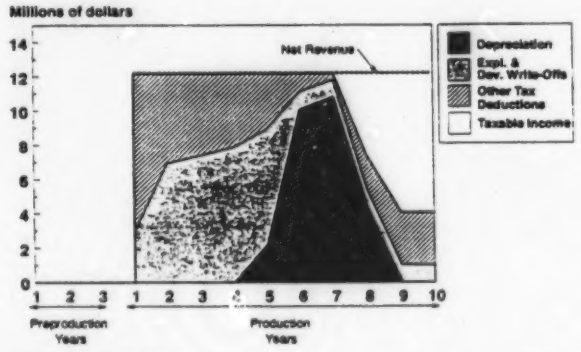
Canada's International Tax Features

- Tax Treaties
- Transfer Pricing Practices
- Income Tax Implications
  - Foreign Source Income
  - Dividends and Inbound Investment

International Tax Burdens: Methods of Evaluation

- Statutory Tax Rates
- Marginal Tax Rates
  - Adjusted for Permanent Deductions
- Average Effective Tax Rates
  - Time Value of Front-End Incentives

Impact of Incentives on the Federal Income Tax Base



Source: Natural Resources Canada.
Notes: 10% Internal Rate of Return (Ontario); Explo. & Dev. = Exploration and Development

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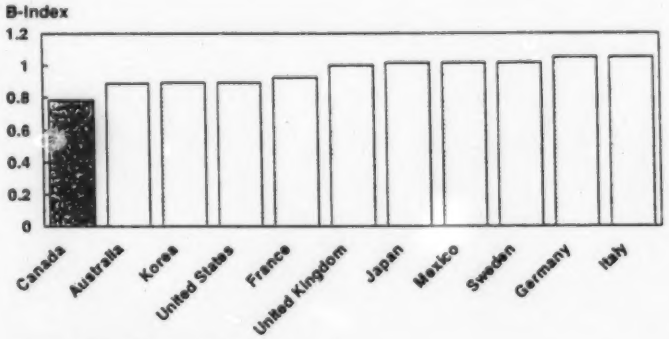
Relative Cost of Research and Development (R&D) Expenditures, 1995-96



Source: Conference Board of Canada.
The figures represent the B-index, or the ratio of the after-tax cost of R&D divided by 1 less the corporate income tax rate.

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Environmental Regulations in Canada: Recent Developments

- *Canada-Wide Accord on Environmental Harmonization*
- Federal-Provincial Agreements to Cooperate on Environmental Assessments
- *Federal Coordination Regulation* and Guidelines for Panel Reviews

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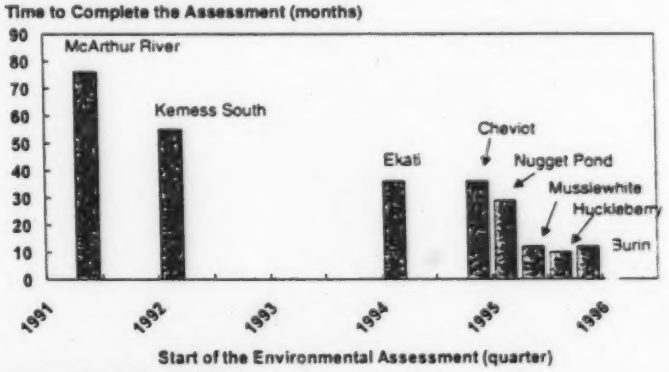
Time to Complete the Environmental Assessments of Mining Projects in Canada



Source: Natural Resources Canada.

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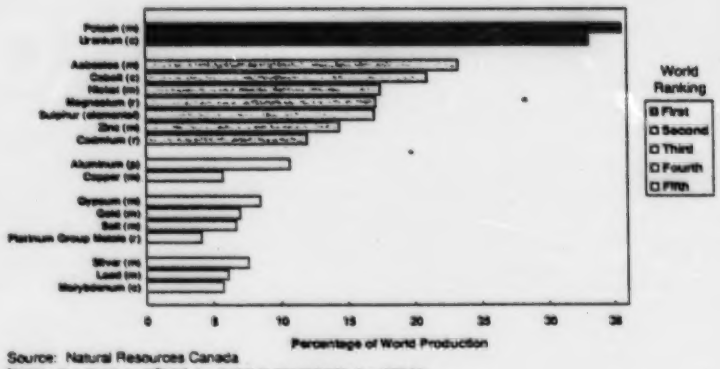
World Production Share and Ranking of Selected Commodities Produced in Canada, 1997



Source: Natural Resources Canada
Notes: m = mine; r= refined; c = metal in concentrate; p = primary

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Canada's Mining and Minerals Expertise

- Exploration Financing
- Investment Analysis
- Due Diligence
- Legal Services
- Geophysics
- Geology
- Geochemistry
- Mapping
- Remote Sensing
- Drilling
- Communications
- Analytical Laboratories
- Feasibility Studies
- Engineering
- Project Management
- Mine Construction
- Parts and Equipment
- Mineral Processing
- Refining
- Smelting
- Automation and Software
- Environmental Management

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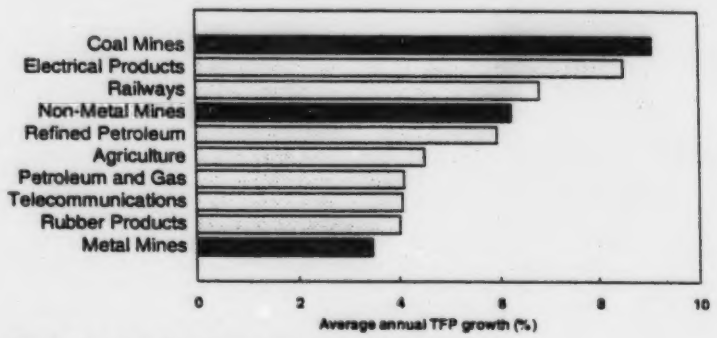
Canada's Leading Ten Industries in Total Factor Productivity (TFP) Growth, 1984-95



Source: Centre for the Study of Living Standards.

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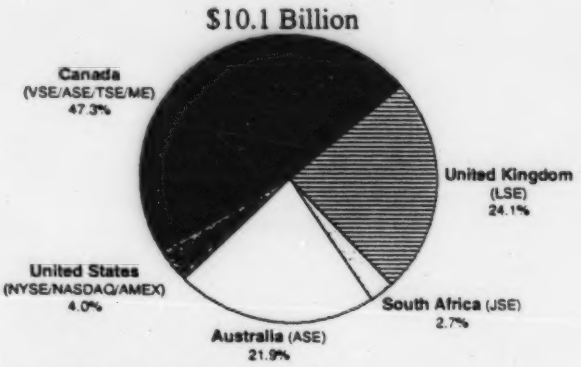
Sources of Equity Financing for Mining Companies, 1997



Sources: Toronto Stock Exchange; Natural Resources Canada.

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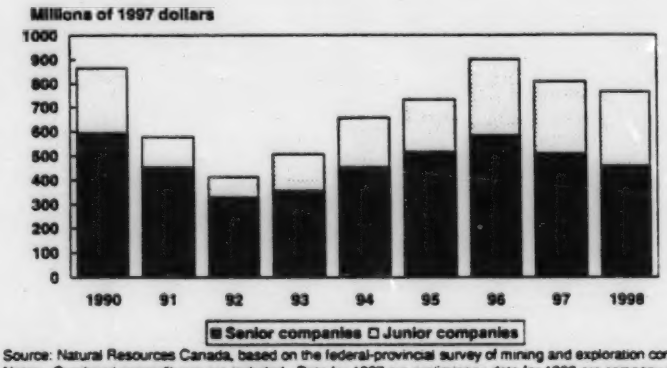
Exploration Expenditures in Canada, 1990-98



Source: Natural Resources Canada, based on the federal-provincial survey of mining and exploration companies.
Notes: Overhead expenditures are included. Data for 1997 are preliminary; data for 1998 are company spending intentions as compiled in January 1998.

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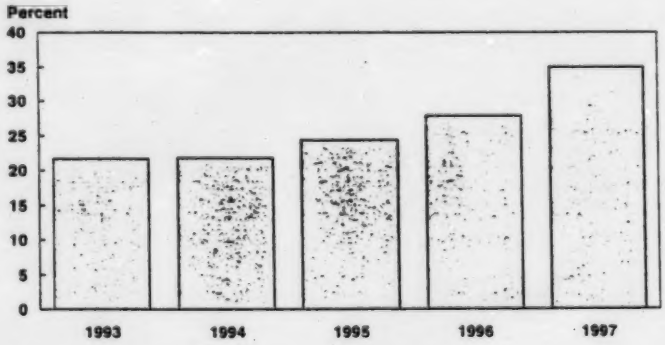
Canada's Proportion of Budgeted Worldwide Exploration Expenditures*, 1993-97



Sources: Metals Economics Group; Natural Resources Canada.
* Companies with worldwide budgets of a least $4 million for precious-metal, base-metal or diamond exploration.

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Canadian Participation in Major Development Projects Worldwide

Sources: AME Mineral Economics; Natural Resources Canada.

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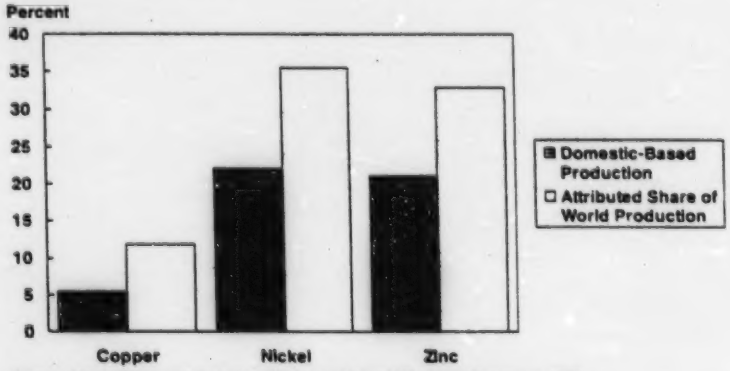
Canada's Share of Western World Metal Production, Forecast for the Year 2002



Source: Natural Resources Canada, based on data from AME Mineral Economics, 1998.

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